

State of Illinois
Department of Transportation
Division of Highways
Springfield

SPECIFICATIONS
FOR
BITUMINOUS MIXTURES FOR MAINTENANCE USE
EMULSIFIED ASPHALT TYPE

Serial Number: M17-02

1. DESCRIPTION. These specifications cover coarse-graded and fine-graded bituminous mixtures for use in maintaining small areas on flexible and rigid type pavements. The bituminous premix shall be composed of mineral aggregate uniformly coated with emulsified asphalt HFE-300, or SS-1, or Penetrating Emulsified Asphalt and prepared cold as further described below. The mixtures shall be capable of being loaded into trucks by either hand shovels or power loading equipment, shall be sufficiently workable for placing with shovels, rakes or other hand tools, and shall readily compact by hand tamping, hand or power rolling, or under the action of traffic at the mixing temperature or at temperatures as low as 4 °C (40 °F), immediately after preparation or over a period of several months in a stockpile. The mixtures shall remain in place when used to patch wet or dry pavements and shall be stable under normal traffic conditions.

2. MATERIALS. Control of the materials shall be according to the general requirements of Section 106 of the current *Standard Specifications for Road and Bridge Construction*. At the discretion of the Engineer, a twenty-five pound sample of the aggregate(s), a one-quart sample of the bituminous material, and a one-pint sample of the additive shall be submitted to the Bureau of Materials and Physical Research, 126 East Ash Street, Springfield, Illinois, for checking the dosage rate and compatibility of the additive with the other ingredient materials.

(a) Aggregate

1. Coarse Aggregate shall consist of crushed stone, crushed gravel, or gravel of Class C quality or better, as defined in Article 1004.01 of the *Standard Specifications for Road and Bridge Construction*.
2. Fine Aggregate shall consist of sand, stone sand, or stone screenings* of Class B quality or better, as defined in Article 1003.01 of the *Standard Specifications for Road and Bridge Construction*.

*The use of stone sand or stone screenings will increase in place stability, but reduce stockpile workability.

(b) Bituminous Material

The bituminous materials used shall be either emulsified asphalt HFE-300, SS-1, or Penetrating Emulsified Asphalt.

1. Emulsified asphalt HFE-300 shall conform to the requirements given in Article 1009.07 (c) of the Standard Specifications. Emulsified asphalt HFE-300 shall be formulated to possess the characteristics required to produce a mixture conforming to the requirements of this specification.
2. Emulsified asphalt SS-1 shall conform to the requirements given in Article 1009.07 (a), of the Standard Specifications.
3. Penetrating Emulsified Asphalt shall be prepared as specified in Article 403.07, except that the spraying (maximum-minimum) application temperature shall be between 60-88 °C (40-190 °F).

| <u>Tests on Emulsion</u> | <u>Min.</u> | <u>Max.</u> |
|--|------------------------------------|-------------|
| Viscosity, Saybolt Furol at 25 °C (77 °F), sec. | 20 | 500 |
| Sieve Test, % | | 0.10 |
| Storage, 1 day, % | | 1 |
| Float Test at 60 °C (140 °F), sec. | | 1200 |
| Stone Coating Test | 3 minutes, stone coated thoroughly | |
| Distillation Test: | | |
| Residue from distillation test to 260 °C (500 °F), % | 65+ | |
| Oil distillate, by volume, % | | 3 |
| Characteristics of residue from distillation | | |
| Test to 260 °C (500 °F) | | |
| Penetration at 25 °C (77 °F), 100 g., 5 sec. | 300+ | |

3. INSPECTION. The Engineer or his authorized representative shall have access at any time to all parts of the plant in order to verify weights or proportions and character of materials used in the preparation of the mixture. The manufacturer shall afford such facilities as may be required for making inspection at the plant and for collecting and forwarding samples of the bituminous mixture to the Department.

4. PLANT AND EQUIPMENT. Storage facilities and all equipment used in the preparation of the mixture shall be approved by the Department. An approved drier shall be available for surface drying the aggregate when needed. The materials for individual batches shall be measured accurately either by volume or weight, by approved methods and equipment. A batch type mixture of approved design and capacity shall be used in mixing the ingredient materials. However, approval for the use of a continuous mixer may be given if it can be shown that satisfactory results will be obtained.

5. PREPARATION OF MIXTURE. At the time of mixing, the aggregate shall not contain enough moisture to cause drifting of the emulsion from the aggregates. The aggregates and bituminous material shall be measured separately and accurately by weight or volume. When a batch type mixer is used, the aggregates shall be added to the mixer and mixed thoroughly. The bituminous material shall then be added and mixing continued for a period of at least 30 seconds or longer if necessary to produce a homogeneous mixture in which all particles of the aggregate are coated uniformly.

6. COMPOSITION OF MIXTURE. The ingredients shall be combined in such a manner as to produce a mixture which when discharged shall be workable. The mixture shall conform to the following composition limits by weight:

| Crushed Stone or Crushed Gravel | | | Gravel | |
|---|----------------|-----------------|-----------------|-----------------|
| Graduation of Extracted Aggregate: (100%) | | | Coarse | Fine |
| | Binder Mixture | Surface Mixture | Surface Mixture | Surface Mixture |
| Percent Passing Sieves | | | | |
| 3/4 inch | 100 | ---- | ---- | ---- |
| 1/2 inch | 75-94 | 100 | 95-100 | ---- |
| 3/8 inch | 64-78 | 90-100 | ---- | 95-100 |
| No. 4 | 32-45 | 65-86 | 50-75 | 50-85 |
| No. 8 | 25-38 | 31-54 | 34-65 | 38-70 |
| No. 200 | 0-5.0 | 0-5.0 | 0-5.0 | 0-5.0 |
| Residual Bitumen (Includes Additive) | 4.0-5.0 | 5.0-6.0 | 4.0-5.0 | 5.0-6.0 |

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This specification supersedes Serial Number M17-95, effective September 1, 1995.

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